epiTRENDS

A Monthly Bulletin on Epidemiology and Public Health Practice in Washington State

# Leptospirosis Reported in Washington State

Vol. 13 No. 2

02.08

On January 30, 2007, a 52 year-old male veterinarian presented to the emergency department at a hospital in Washington State after three days of anorexia, fever, arthralgia, malaise, nausea and vomiting. Testing for influenza was negative. The illness progressed and the patient was admitted to the hospital two days later. On admission, he complained of fever, dizziness, blurred vision, dehydration, and a mild cough. A lumbar puncture showed cells in the cerebral spinal fluid (CSF) (pleocytosis). Peripheral blood count showed an elevated white blood cell count with a left shift suggesting an infection. Viral and bacterial cultures of the CSF were negative, as were blood cultures.

An astute infectious disease consultant noted that the veterinarian had examined a pet rat for fleas approximately ten days before onset of illness. The rat urinated while being handled. Urine contaminated minor open skin lesions on the hands of the veterinarian, who was not wearing gloves. Routine hand washing was done after the examination.

Because of this exposure, leptospirosis was considered as a possible diagnosis. Microagglutination testing done by Centers for Disease Control and Prevention (CDC), confirmed *Leptospira interrogans* infection with the serovar *icterohaemorrhagiae*. In addition, the rat was confirmed by the Washington Animal Disease Diagnostic Laboratory in Pullman, Washington, as positive for *L. interrogans icterohaemorrhagiae* antibodies.

## Leptospirosis Background

Leptospirosis may be among the world's most common diseases spread from animals to humans. Although it is common in tropical countries and regions such as Hawaii, sporadic leptospirosis outbreaks are not unusual in temperate regions including North America.

Leptospirosis is caused by infection with leptospires: thin motile spirochetes (Figure 1). These bacteria may be associated with animal hosts, but also survive in fresh water, soil, and mud. There are over 200 known pathogenic serovars.

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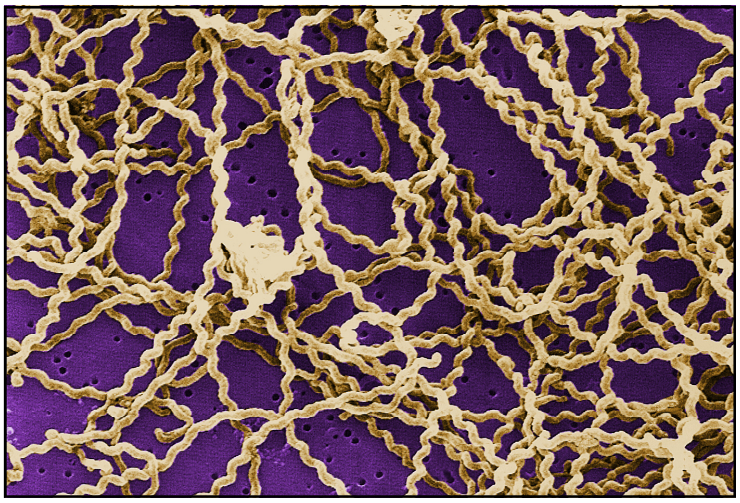
**Figure 1.**

***Leptospira* sp. bacteria, scanning electron micrograph (SEM)**

**Image content provider: CDC/Rob Weyant**

**Photo: Janice Carr**



Leptospires in infected urine can be transmitted through ingestion or contact with cut or abraded skin, mucous membranes or conjunctivae. Humans are typically infected through occupational or recreational exposure to natural water, soil or vegetation contaminated by the urine of infected animals; common reservoirs in this country include swine, cattle, dogs, raccoons and rats.

The incubation period ranges from four to 29 days. Leptospirosis can be a mild to severe illness. Symptoms usually begin abruptly with fever, chills, muscle pain (particularly in the calves and lumbar region) and headaches, and may include conjunctivitis, a rash, abdominal pain, vomiting, diarrhea and meningeal signs. Vasculitis can occur. The acute septicemia may be followed by a secondary phase of severe disease characterized by jaundice, renal failure, hemorrhage, or shock.

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## Leptospirosis in Washington State

Leptospirosis is a notifiable condition in Washington. During 2007, the Washington State Department of Health (DOH) received reports of five human cases of leptospirosis. Cases were reported from Clallam, Clark, Pierce, and Thurston counties; all patients were male and ages ranged from 26 to 59 years. All were hospitalized and none died from the illness. All five infections had confirmatory testing performed at the CDC. While none of the cases had a shared exposure, they all apparently were exposed through direct contact with infected animals or natural water sources within Washington State.

Leptospirosis is rare in Washington, with 0 to five cases reported each year (Figure 2). No cases were reported from 1987 through 1995. Of leptospirosis cases reported between 1996 and 2004, only four cases (44 %) reported exposure in Washington State. However, between 2005 and 2007, 8 cases (80 %) were exposed in Washington.

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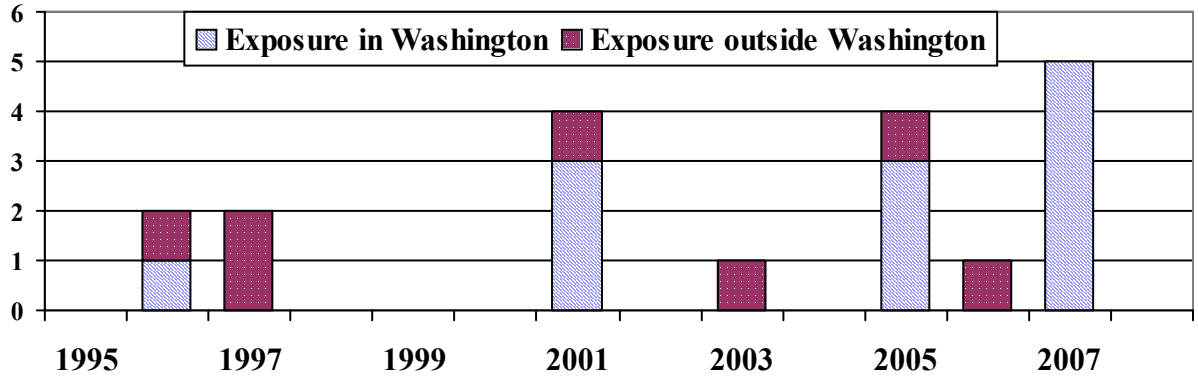
**Figure 2. Leptospirosis cases reported in Washington State 1995-2007**




## Laboratory Diagnosis

The organism may be isolated from samples of blood and CSF obtained during the first ten days of illness, and in the urine during the first week of illness. The microagglutination test is the standard for serological diagnosis, and is available at CDC and some commercial laboratories. Serology specimens should be drawn acutely and again at least two weeks later. Health care providers who suspect a case of leptospirosis should contact the local health jurisdiction for advice on sample collection and laboratory confirmation.

## Prevention

Steps to prevent leptospirosis include recognizing sources of contamination and preventing exposure. Avoid swimming or wading in contaminated water and wear protective clothing and gear such as boots, gloves and aprons when handling risk animals. The case of leptospirosis involving a small animal veterinarian triggers the caution for using personal protection in handling animals and their excreta.

Other prevention measures include controlling rodents, immunizing farm animals and pets, and segregating infected domestic animals. People who suspect they have been exposed to leptospirosis should report early signs of any febrile illness to a health care provider.

## Additional Resources

Plank R, Dean D. Overview of the epidemiology, microbiology, and pathogenesis of *Leptospira* spp. in humans. *Microbes Infect* 2000; 2:1265-76.

Outbreak of acute febrile illness among athletes participating in triathlons — Wisconsin and Illinois. *MMWR* 1998; 47:585-8.

Kauffman A, Weyant R. Leptospiraceae. In: Murray P, Baron E, Pfaller M, Tenover F, Yolken R, editors. *Manual of clinical microbiology*. 6th ed. Washington: American Society for Microbiology; 1995. p. 621-5.

Levett PN. Leptospirosis. Clin Microbiol Rev. 2001; 14: 296-326.